

Warm Up answers:

$$\textcircled{1} \frac{4x^2}{2x^2+3x} = \frac{4x^{\cancel{2}}}{\cancel{2}x(2x+3)} = \boxed{\frac{4x}{2x+3}}$$

$$\textcircled{2} \frac{x^2-2x-15}{x^2-4x-5} = \frac{(\cancel{x-5})(x+3)}{(\cancel{x-5})(x+1)} = \boxed{\frac{x+3}{x+1}}$$

$$\textcircled{3} \frac{x^2-16}{x^2+x-12} = \frac{(\cancel{x+4})(x-4)}{(\cancel{x+4})(x-3)} = \boxed{\frac{x-4}{x-3}}$$

$$\textcircled{4} \frac{x^2-4}{(x+1)(x-2)} \cdot \frac{3x^2+4x+1}{x^2+5x+6}$$

$$\frac{\cancel{(x-2)}(\cancel{x+2})}{(\cancel{x+1})(\cancel{x-2})} \cdot \frac{(3x+1)\cancel{(x+1)}}{(x+3)(\cancel{x+2})}$$

$$= \boxed{\frac{3x+1}{x+3}}$$

$$\textcircled{5} \frac{2x^2-18}{x^2+4x+3} \cdot \frac{x-3}{4x^2}$$

$$\frac{2\cancel{(x+3)}(x-3)}{(\cancel{x+3})(x+1)} \cdot \frac{(x-3)}{2\cancel{4}x^2} = \frac{(x-3)(x-3)}{2x^2(x+1)} = \frac{(x-3)^2}{2x^2(x+1)}$$

$$\textcircled{6} \frac{x^2 - x - 6}{x^2 + 3x - 4} \cdot \frac{x^2 + 6x + 8}{x^2 - 5x + 6}$$

$$\frac{(\cancel{x-3})(x+2)}{(\cancel{x+4})(x-1)} \cdot \frac{(\cancel{x+4})(x+2)}{(x-2)(\cancel{x-3})} = \frac{(x+2)(x+2)}{(x-1)(x-2)}$$

$$\textcircled{7} \frac{2x+6}{5x^2-35x} \cdot \frac{10x+40}{4x+12}$$

$$\frac{2(\cancel{x+3})}{5x(x-7)} \cdot \frac{\cancel{10}(x+4)}{\cancel{4}(x+3)} = \frac{x+4}{x(x-7)}$$

9.5

$$\textcircled{1} x^2 + 4 + (x^3 + 2x - 2) =$$
$$x^3 + x^2 + 2x + 2$$

$$\textcircled{2} x - 2 + (x^2 + 3x + 2) =$$
$$x^2 + 4x$$

$$\textcircled{3} x + 4 - (x + 2)$$
$$x + 4 - x - 2$$
$$2$$

$$\textcircled{4} \quad x^2 - 2x + 3 - (x + 3) =$$

$$x^2 - 2x + 3 - x - 3$$

$$x^2 - 3x$$

$$\textcircled{5} \quad (x + 3)(x^2 + 4)$$

$$x^3 + 4x + 3x^2 + 12$$

$$x^3 + 3x^2 + 4x + 12$$

$$⑥ (x^2 + 2x + 1)(x + 4)$$

$$x^3 + 4x^2 + 2x^2 + 8x + x + 4$$

$$x^3 + 6x^2 + 9x + 4$$

$$\textcircled{1} \frac{4}{2} + \frac{3}{2} = \frac{7}{2}$$

$$\textcircled{2} \frac{2}{5} - \frac{4}{5} = \frac{-2}{5}$$

Steps:

① combine numerators (+ or -)

② keep denom. same

$$\textcircled{1} \frac{3}{x} + \frac{5}{x} = \frac{8}{x}$$

$$\textcircled{2} \frac{x+2}{x^2+1} + \frac{3+x}{x^2+1} = \frac{2x+5}{x^2+1}$$

$$\textcircled{3} \frac{4x^2}{x-2} + \frac{x-5}{x-2} = \frac{4x^2+x-5}{x-2}$$

$$\textcircled{4} \frac{x+1}{x+1} - \frac{3}{x+1} = \frac{x+1-3}{x+1} = \frac{x-2}{x+1}$$

$$\textcircled{5} \frac{x+2}{x^2-2} - \frac{x+4}{x^2-2} = \frac{x+2-(x+4)}{x^2-2} = \frac{x+2-x-4}{x^2-2}$$

$$= \frac{-2}{x^2-2}$$

p. 565

15, 16, 17

$$\textcircled{15} \quad \frac{5x^2}{x+8} + \frac{5x}{x+8} = \boxed{\frac{5x^2+5x}{x+8} = \frac{5x(x+1)}{x+8}}$$

$$\textcircled{16} \quad \frac{6x^2}{x-2} - \frac{12x}{x-2} = \frac{6x^2-12x}{x-2} = \frac{6x(\cancel{x-2})}{(\cancel{x-2})}$$

$$= 6x$$

$$\textcircled{17} \frac{x}{x^2-5x} - \frac{5}{x^2-5x} = \frac{x-5}{x^2-5x} = \frac{\cancel{(x-5)}}{x\cancel{(x-5)}} = \textcircled{\frac{1}{x}}$$

$$\frac{2}{3} + \frac{5}{6}$$

* ① $\frac{1}{4} \cdot \frac{2}{3} + \frac{1}{4} \cdot \frac{3}{3} = \frac{8}{12} + \frac{3}{12} = \frac{11}{12}$

LCD: $12 = 3 \cdot 4$

② $\frac{5}{3} - \frac{4}{9} = \frac{15}{18} - \frac{8}{18} = \frac{7}{18}$

18
 $3 \cdot 2 \cdot 3$
 $\frac{18}{3 \cdot 3 \cdot 2}$

$$\textcircled{4} \frac{y}{y} \cdot \frac{4}{x} + \frac{5}{y} \cdot \frac{x}{x} =$$

$$\frac{4y}{xy} + \frac{5x}{xy} =$$

$$\boxed{\frac{4y+5x}{xy}}$$

$$LCD = xy$$

$$\textcircled{5} \frac{2 \cdot \frac{3x+1}{2x}}{2} + \frac{5}{2} \cdot \frac{2x}{2x} = \frac{3x+1}{2x} + \frac{5x}{2x} = \boxed{\frac{8x+1}{2x}}$$

LCD: $2x$

$$\frac{\quad}{4x} + \frac{\quad}{4x}$$

$$\textcircled{7} \frac{5}{(x+1)x-1} + \frac{6}{\cancel{(x+1)(x-1)}} =$$

$$\frac{5x+5}{(x+1)(x-1)} + \frac{6}{(x+1)(x-1)}$$

LCD: $(x+1)(x-1)$

$$\boxed{\frac{5x+11}{(x+1)(x-1)}}$$

$$\textcircled{8} \frac{4}{4} \cdot \frac{3}{(x+4)} - \frac{x+2}{4} \cdot \frac{(x+4)}{(x+4)} = \frac{12}{4(x+4)} - \frac{x^2+6x+8}{4(x+4)}$$

$$= \frac{-x^2-6x+4}{4(x+4)}$$

LCD: $4(x+4)$

$$\begin{array}{r} 18 \\ \swarrow \downarrow \searrow \\ 3 \cdot 3 \cdot 2 \end{array} \quad \begin{array}{r} 6 \cdot 9 \\ 12 \end{array}$$